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| 10/829,566 | 04/22/2004 | Kenneth A. Epstein | 59079US002 | 6338 |

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| EXAMINER | |
|---|---|
| PAYNE, SHARON E | |

| ART UNIT | PAPER NUMBER |
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| 2875 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

LegalUSDocketing@mmm.com
LegalDocketing@mmm.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/829,566 | EPSTEIN ET AL. | |
| | Examiner | Art Unit | |
| | Sharon E. Payne | 2875 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *10 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-110* is/are pending in the application.

4a) Of the above claim(s) *8-15,23-30,38-45,53-65,73-85 and 93-105* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7, 16-22, 31-37, 46-52, 66-72, 86-92 and 106-110* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Objections*

1. Claims 61-62 and 76-85 are objected to because of the following informalities: they should be marked "withdrawn" and not "original." Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-7, 16-22, 34, 36, 46-52, 66-72 and 86-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumitomo in view of McNaney (U.S. Patent 4,128,308) and Koike et al. (U.S. Patent 6,172,809).

Regarding claim 1, Sumitomo discloses a transflector body having a first surface and a second surface (p. 5, bottom and middle of the figure), the second surface being a structured surface comprising a plurality of prismatic structures having a first facet and a second facet (p. 5, bottom of the figure), and in a transmissive mode, light incident onto the second surface at a transmitted incident

angle is directed by a prismatic structure to the first surface and refracted through the first surface with a maximum intensity at about a transmitted exit angle (p. 5, portion 4 of the figure). Sumitomo does not disclose the features associated with the reflective mode and what angle the facets make.

McNaney discloses the feature wherein in a reflective mode, light incident onto the first surface at a reflected incident angle is refracted through the first surface (Fig. 6, see portion on left coming down to bottom prisms) reflected at the first facet (12) of a first prismatic structure (54), reflected at the second facet (13) of a second prismatic structure (55), and refracted through the first surface with a maximum intensity at about a reflected exit angle (Fig. 6, middle right).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of McNaney in the apparatus of Sumitomo to "provid[e] changes in the cross sectional dimensions of a substantially collimated monochromatic beam of light" (abstract of McNaney).

Koike et al. discloses the first facet making an angle with respect to the second facet that is no more than about 70 degrees (column 14, lines 39-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of Koike et al. in the apparatus of Sumitomo to produce the desired optical effects.

Concerning claims 2, 17, 47, 67 and 87, Sumitomo discloses the reflected exit angle being about the same as the transmitted exit angle (p. 5, reference numbers 2 and 4).

Regarding claims 3, 18, 48, 68 and 88, Sumitomo discloses the first surface of the transflector body as being substantially planar (p. 5, top portion of refractive body).

Concerning claims 4, 19, 34, 49, 69 and 89, Sumitomo and McNaney do not disclose the value of the angles the facets make with respect to the normal. Koike et al. discloses each first facet making a first angle and each second facet making a second angle with respect to a normal to the first surface (Fig. 7A) and absolute values of the first and second angles are from about 22 degrees to about 42 degrees (column 14, lines 39-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of Koike et al. in the apparatus of Sumitomo and McNaney to produce the desired optical effects.

Concerning claims 5, 20, 50, 70 and 90, Sumitomo discloses the absolute values of the reflected and transmitted exit angles are from about 0 degrees to about 20 degrees with respect to an axis normal to the first surface (p. 5, portions a and b).

Regarding claims 6, 21, 36, 51, 71 and 91 Sumitomo and McNaney do not disclose the absolute value of the transmitted incident angle. Koike et al. discloses

the absolute value of the transmitted incident angle to be from about 100 to about 120 degrees with respect to an axis normal to the first surface (Fig. 7A). (The transmitted incident angle is 180 degrees minus 65 degrees which is 115 degrees.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of Koike et al. in the apparatus of Sumitomo and McNaney to produce the desired optical effects.

Concerning claims 7, 22, 52, 72 and 92, Sumitomo discloses the absolute value of the reflected incident angle is from about 20 degrees to about 40 degrees with respect to an axis normal to the first surface (page 13 of the translation, line 9).

Regarding claim 16, Sumitomo discloses a transflector body having a first surface and a second surface (p. 5, bottom and middle), the second surface being a structured surface comprising a plurality of prismatic structures having a first facet and a second facet (p. 5, bottom of figure), each first facet making a first angle and each second facet making a second angle with respect to a normal to the first surface (p. 5, bottom of figure), and in a transmissive mode, light incident onto the second surface at a transmitted incident angle is directed by a prismatic structure to the first surface and refracted through the first surface with a maximum intensity at about a transmitted exit angle (p. 5, portion 4). Sumitomo does not disclose the values of the angles the facets make or the features of the reflective mode.

McNaney discloses the feature wherein in a reflective mode, light incident onto the first surface at a reflected incident angle is refracted through the first surface (Fig. 6, see portion on left coming down to bottom prisms) reflected at the first facet (12) of a first prismatic structure (54), reflected at the second facet (13) of a second prismatic structure (55), and refracted through the first surface with a maximum intensity at about a reflected exit angle (Fig. 6, middle right).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of McNaney in the apparatus of Sumitomo to "provid[e] changes in the cross sectional dimensions of a substantially collimated monochromatic beam of light" (abstract of McNaney).

Koike et al. discloses the absolute values of the first angles being different from absolute values of the second angles (column 14, lines 40-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of Koike et al. in the apparatus of Sumitomo to produce the desired optical effects.

Regarding claim 46, Sumitomo discloses a a transflector having a body (p. 5, whole figure), the body having a first surface and a second surface (p. 5, middle and bottom of the figure), the second surface being a structured surface that comprises a plurality of prismatic structures having a first facet and a second facet (p. 5, bottom of figure), and in a transmissive mode, light originating from the backlight and incident onto the second surface at a transmitted incident angle is directed by a

prismatic structure to the first surface, refracted through the first surface, and transmitted through transflector with a maximum intensity at about a transmitted angle (p. 5, portion 4). Sumitomo does not disclose an image-forming device, a backlight or the angle of the facets or the features of the reflective mode.

McNaney discloses the feature wherein in a reflective mode, light incident onto the first surface at a reflected incident angle is refracted through the first surface (Fig. 6, see portion on left coming down to bottom prisms) reflected at the first facet (12) of a first prismatic structure (54), reflected at the second facet (13) of a second prismatic structure (55), and refracted through the first surface with a maximum intensity at about a reflected exit angle (Fig. 6, middle right).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of McNaney in the apparatus of Sumitomo to "provid[e] changes in the cross sectional dimensions of a substantially collimated monochromatic beam of light" (abstract of McNaney).

Koike et al. discloses a transmissive image-forming device (abstract), a backlight (abstract), and the first facet making an angle with respect to the second facet that is no more than about 70 degrees (column 14, lines 40-45), said transflector disposed between the image-forming device and the backlight so that the first surface faces the image-forming device and the second surface faces the backlight (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of Koike et al. in the apparatus of Sumitomo to produce an image with adequate and even backlighting.

Concerning claim 66, Sumitomo discloses a transflector body having a first surface and a second surface (p. 5, bottom and middle), the second surface being a structured surface comprising a plurality of prismatic structures having a first facet and a second facet (p. 5, bottom of figure), each first facet making a first angle and each second facet making a second angle with respect to a normal to the first surface (p. 5, bottom of figure), and in a transmissive mode, light incident onto the second surface at a transmitted incident angle is directed by a prismatic structure to the first surface and refracted through the first surface with a maximum intensity at about a transmitted exit angle (p. 5, portion 4). Sumitomo does not disclose an image-forming device, a backlight or the angle of the facets or the features of the reflective mode.

McNaney discloses the feature wherein in a reflective mode, light incident onto the first surface at a reflected incident angle is refracted through the first surface (Fig. 6, see portion on left coming down to bottom prisms) reflected at the first facet (12) of a first prismatic structure (54), reflected at the second facet (13) of a second prismatic structure (55), and refracted through the first surface with a maximum intensity at about a reflected exit angle (Fig. 6, middle right).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of McNaney in the apparatus of Sumitomo to "provid[e] changes in the cross sectional dimensions of a substantially collimated monochromatic beam of light" (abstract of McNaney).

Koike et al. discloses a transmissive image-forming device (abstract), a backlight (abstract), each first facet making a first angle and each second facet making a second angle with respect to a normal to the first surface, and the absolute values of the first angles being different from absolute values second angles (column 14, lines 40-45), said transflector disposed between the image-forming device and the backlight so that the first surface faces the image-forming device and the second surface faces the backlight (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of Koike et al. in the apparatus of Sumitomo to produce an image with adequate and even backlighting.

Regarding claim 86, Sumitomo discloses a transflector body having a refractive index (Fig. on p. 5 of translation, see ray trace), a first surface (p. 5, flat surface) and a second surface (p. 5, prisms), the second surface being a structured surface comprising a plurality of prismatic structures having a first facet and a second fact (p. 5, bottom of figure), each first facet making a first angle (p. 5, bottom of figure) and each second facet making a second angle (p. 5, bottom of figure) with respect to a normal to the first surface (p. 5), wherein the refractive index, the first

angles and the second angles of the transflector body are configured for transflective operation (p.5, parts a and b) characterized by a transmitted exit angle (p. 5, portion a) and a reflected exit angle (p. 5, portion b), and in a transmissive mode (p. 5, portion a, reference number 4), light incident onto the second surface at a transmitted incident angle is directed by a prismatic structure to the first surface and refracted through the first surface with a maximum intensity at about the transmitted exit angle (p. 5, portion a, reference number 4). Sumitomo does not disclose an image forming device or the features of the reflective mode.

McNaney discloses the feature wherein in a reflective mode, light incident onto the first surface at a reflected incident angle is refracted through the first surface (Fig. 6, see portion on left coming down to bottom prisms) reflected at the first facet (12) of a first prismatic structure (54), reflected at the second facet (13) of a second prismatic structure (55), and refracted through the first surface with a maximum intensity at about a reflected exit angle (Fig. 6, middle right).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of McNaney in the apparatus of Sumitomo to "provid[e] changes in the cross sectional dimensions of a substantially collimated monochromatic beam of light" (abstract of McNaney).

Koike et al. discloses a transmissive image-forming device (abstract), a backlight (abstract), said transflector disposed between the image-forming device

and the backlight so that the first surface faces the image-forming device and the second surface faces the backlight (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the light go through the image-forming device as shown in Koike et al. in the apparatus of Sumitomo to produce an image with adequate and even backlighting.

4. Claims 31-33, 35, 37 and 106-110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumitomo (P2001-350008A) in view of McNaney (U.S. Patent 4,128,308).

Regarding claim 31, Sumitomo discloses a transflector body having a refractive index (Fig. on p. 5 of translation, see ray trace), a first surface (p. 5, flat surface) and a second surface (p. 5, prisms), the second surface being a structured surface comprising a plurality of prismatic structures having a first facet and a second fact (p. 5, bottom of figure), each first facet making a first angle (p. 5, bottom of figure) and each second facet making a second angle (p. 5, bottom of figure) with respect to a normal to the first surface (p. 5), wherein the refractive index, the first angles and the second angles of the transflector body are configured for transflective operation (p.5, parts a and b) characterized by a transmitted exit angle (p. 5, portion a) and a reflected exit angle (p. 5, portion b), and in a transmissive mode (p. 5, portion a, reference number 4), light incident onto the second surface at a

transmitted incident angle is directed by a prismatic structure to the first surface and refracted through the first surface with a maximum intensity at about the transmitted exit angle (p. 5, portion a, reference number 4). Sumitomo does not disclose the features of the reflective mode.

McNaney discloses the feature wherein in a reflective mode, light incident onto the first surface at a reflected incident angle is refracted through the first surface (Fig. 6, see portion on left coming down to bottom prisms) reflected at the first facet (12) of a first prismatic structure (54), reflected at the second facet (13) of a second prismatic structure (55), and refracted through the first surface with a maximum intensity at about a reflected exit angle (Fig. 6, middle right).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of McNaney in the apparatus of Sumitomo to "provid[e] changes in the cross sectional dimensions of a substantially collimated monochromatic beam of light" (abstract of McNaney).

Concerning claim 32, Sumitomo discloses the reflected exit angle being about the same as the transmitted exit angle (p. 5, reference numbers 2 and 4).

Regarding claim 33, Sumitomo discloses the first surface of the transflector body as being substantially planar (p. 5, top portion of refractive body).

Concerning claim 35, Sumitomo discloses the absolute values of the reflected and transmitted exit angles are from about 0 degrees to about 20 degrees with respect to an axis normal to the first surface (p. 5, portions a and b).

Regarding claim 37, Sumitomo discloses the absolute value of the reflected incident angle is from about 20 degrees to about 40 degrees with respect to an axis normal to the first surface (page 13 of the translation, line 9).

Concerning claim 106, Sumitomo discloses the steps of selecting a reflected incident angle (page 17 of the translation, paragraph 0024), selecting a transmitted incident angle (paragraph 0024), selecting a reflected exit angle (paragraph 0024), selecting a transmitted exit angle (paragraph 0024) and configuring a transflector body having a first surface (p. 5, middle of figure) and a second surface (p. 5, bottom of figure), the second surface being a structured surface comprising a plurality of prismatic structures (p. 5, bottom of figure), and in a transmissive mode, light incident onto the second surface at the transmitted incident angle is directed by a prismatic structure to the first surface (p. 5, portion 4) and refracted through the first surface with a maximum intensity at about the transmitted exit angle (p. 5, portion 4). Sumitomo does not disclose the features of the reflective mode.

McNaney discloses the feature wherein in a reflective mode, light incident onto the first surface at a reflected incident angle is refracted through the first surface (Fig. 6, see portion on left coming down to bottom prisms) reflected at the first facet (12) of a first prismatic structure (54), reflected at the second facet (13) of a second prismatic structure (55), and refracted through the first surface with a maximum intensity at about a reflected exit angle (Fig. 6, middle right).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of McNaney in the apparatus of Sumitomo to "provid[e] changes in the cross sectional dimensions of a substantially collimated monochromatic beam of light" (abstract of McNaney).

Concerning claim 107, Sumitomo discloses the transmitted exit angle being selected to be about the same as the reflected exit angle (p. 5, portions 2 and 4).

Regarding claim 108, Sumitomo discloses the first surface being selected to be substantially planar (p. 5, middle of the figure).

Concerning claim 109, Sumitomo discloses the steps of selecting a reflected incident angle (page 17 of the translation, paragraph 0024), selecting a transmitted incident angle (paragraph 0024), selecting a reflected exit angle (paragraph 0024), selecting a transmitted exit angle (paragraph 0024), configuring a transflector body having a refractive index (p. 5, portions 2 and 4), a substantially planar surface (p. 5, middle of the figure) and a structured surface comprising a plurality of prismatic structures having a first facet (p. 5, bottom of figure) and a second facet (p. 5, bottom of figure) each first facet making a first angle and each second facet making a second angle with respect to a normal to the substantially planar surface (p. 5, bottom of figure), and in a transmissive mode, light incident onto the structured surface at the transmitted incident angle is directed by a prismatic structure to the substantially planar surface (p. 5, portion 4 of the figure) and is refracted through the substantially planar surface with a maximum intensity at about the

transmitted exit angle (p. 5, portion 4 of the figure). Sumitomo does not disclose the features of the reflective mode.

McNaney discloses the feature wherein in a reflective mode, light incident onto the first surface at a reflected incident angle is refracted through the first surface (Fig. 6, see portion on left coming down to bottom prisms) reflected at the first facet (12) of a first prismatic structure (54), reflected at the second facet (13) of a second prismatic structure (55), and refracted through the first surface with a maximum intensity at about a reflected exit angle (Fig. 6, middle right).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the configuration of McNaney in the apparatus of Sumitomo to "provid[e] changes in the cross sectional dimensions of a substantially collimated monochromatic beam of light" (abstract of McNaney).

Regarding claim 110, Sumitomo discloses the transmitted exit angle being selected to be substantially the same as the reflected exit angle (p. 5, portions a and b of the figure).

### *Response to Arguments*

5. Applicant's arguments with respect to claims 1-7, 16-22, 31-37, 46-52, 61-62, 66-72, 76-92 and 106-110 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon E. Payne whose telephone number is (571) 272-2379. The examiner can normally be reached on regular business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sharon Payne
SHARON E. PAYNE
PRIMARY EXAMINER

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